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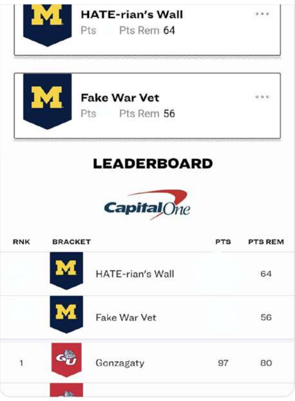

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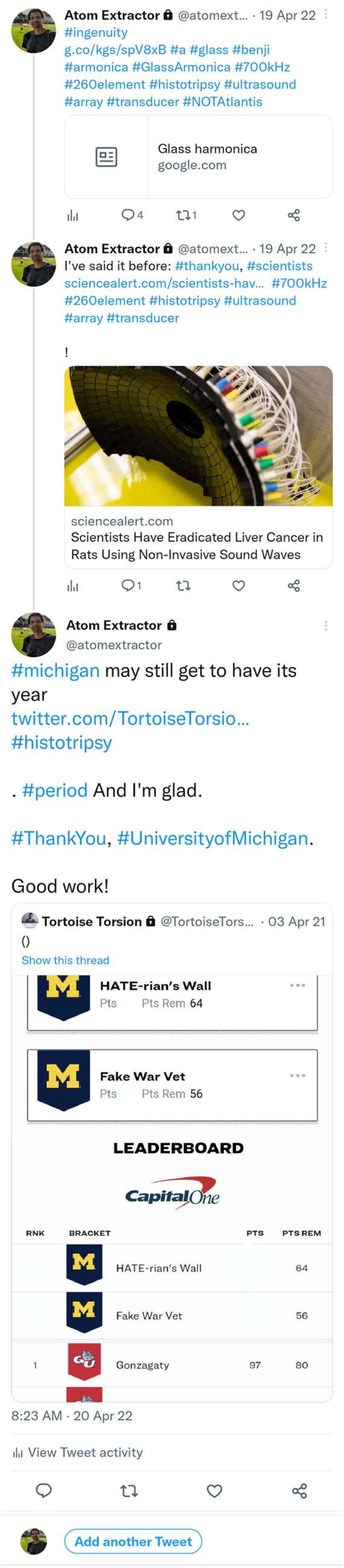

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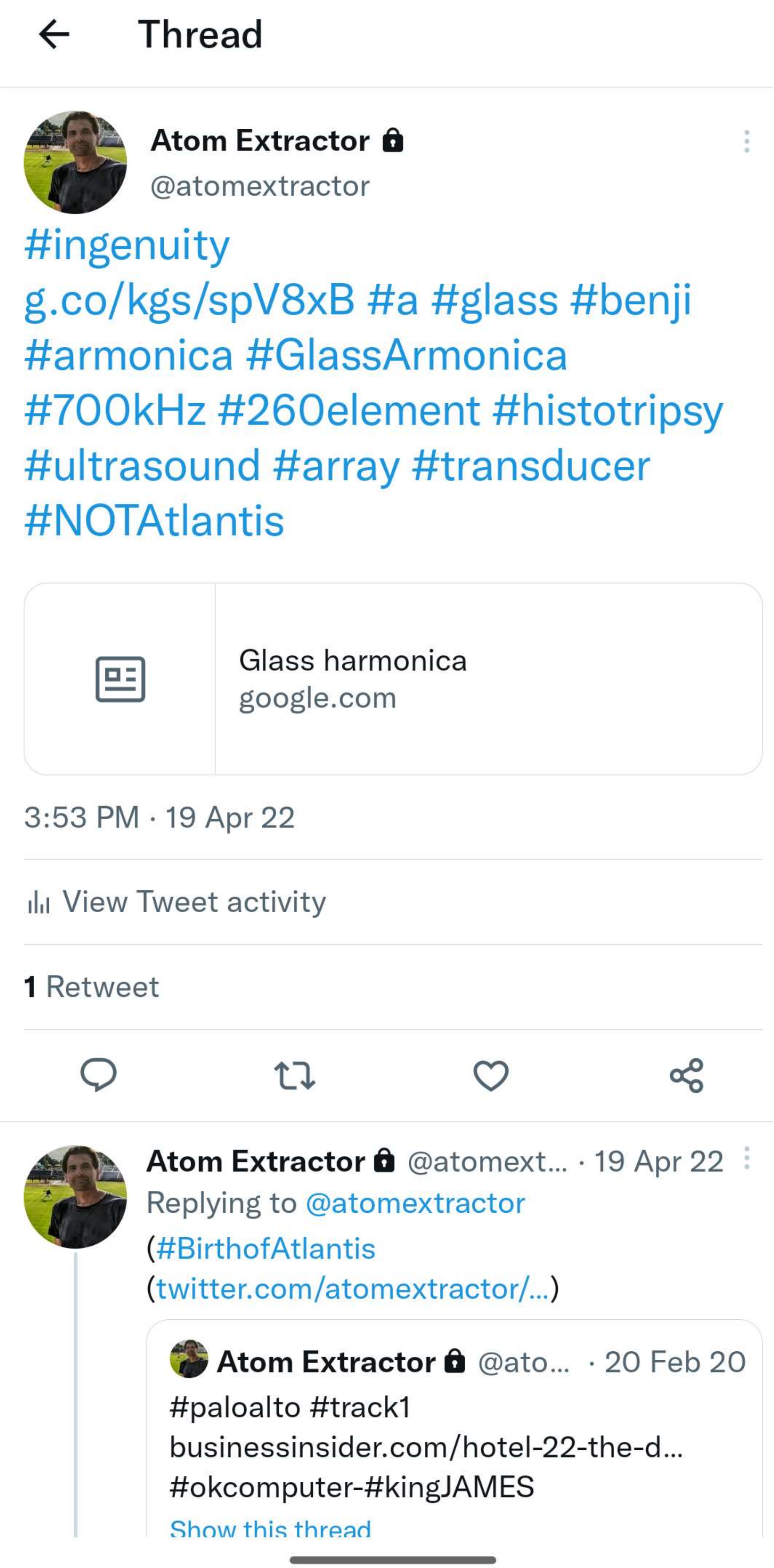

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Electrotherapy

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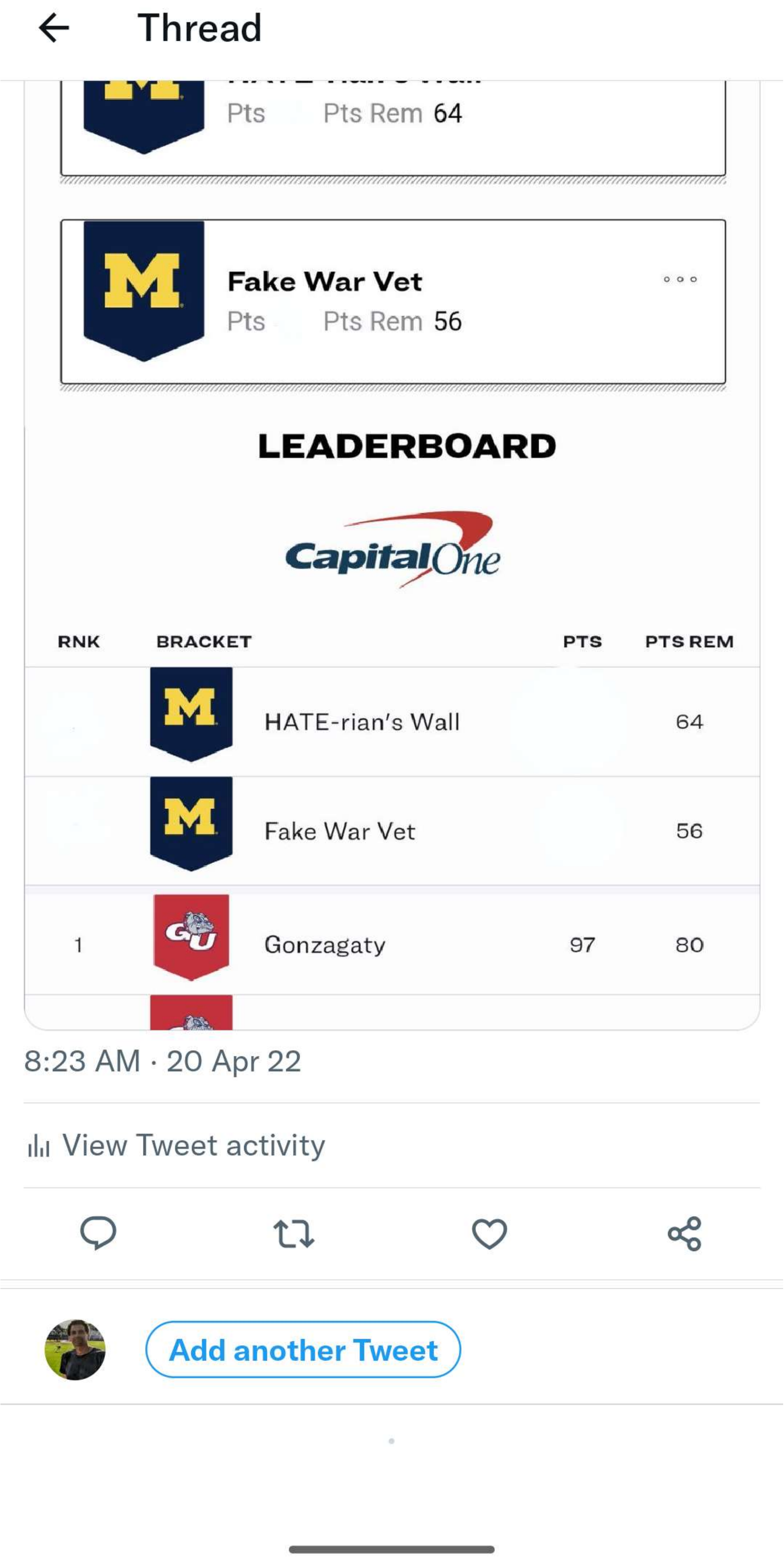

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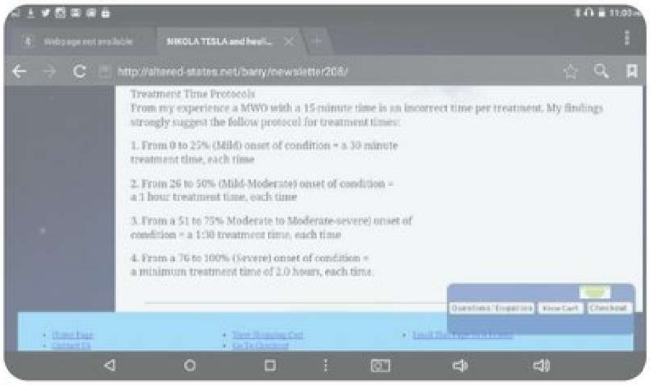
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Treatment Time Protocols
From my experience a MWO with a 15-minute time is an incorrect time per treatment. My findings strongly suggest the follow protocol for treatment times:

1. From 0 to 25% (Mild) onset of condition = a 30 minute treatment time, each time

2. From 26 to 50% (Mild-Moderate) onset of condition = a 1 hour treatment time, each time

3. From a 51 to 75% Moderate to Moderate-severe) onset of condition = a 1:30 treatment time, each time

4. From a 76 to 100% (Severe) onset of condition = a minimum treatment time of 2.0 hours, each time.

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NEW ATLAS

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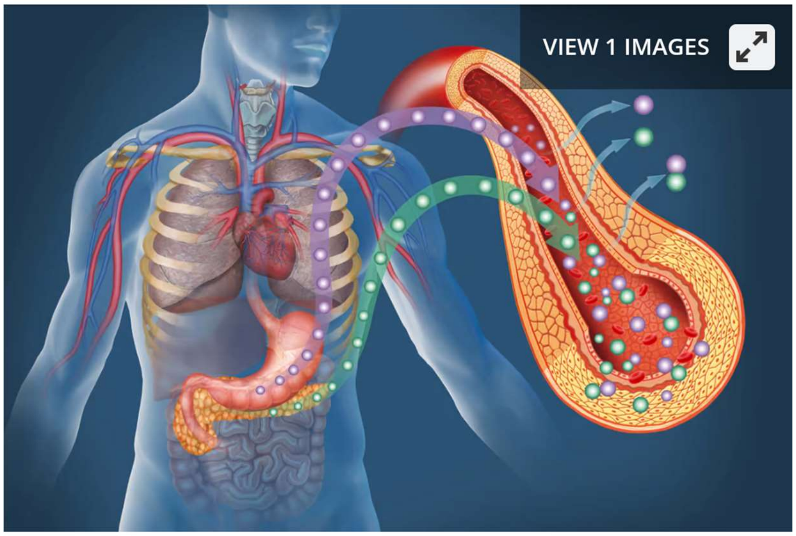
Diabetes successfully treated using ultrasound in preclinical study

By Rich Haridy

April 05, 2022



Animals studies have demonstrated just three minutes of focused ultrasound a day can keep blood glucose levels normal, and early human trials are now underway Depositphotos

Promising new research has raised the possibility of treating type 2 diabetes without drugs. Across three different animal models researchers have demonstrated how short bursts of ultrasound targeted at specific clusters of nerves in the liver can effectively lower insulin and glucose levels.

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Research Briefing | Published: 31 March 2022

Therapeutic ultrasound modulates autonomic nerve pathways in diabetes

Nature Biomedical Engineering **6**, 681–682 (2022) | Cite this article

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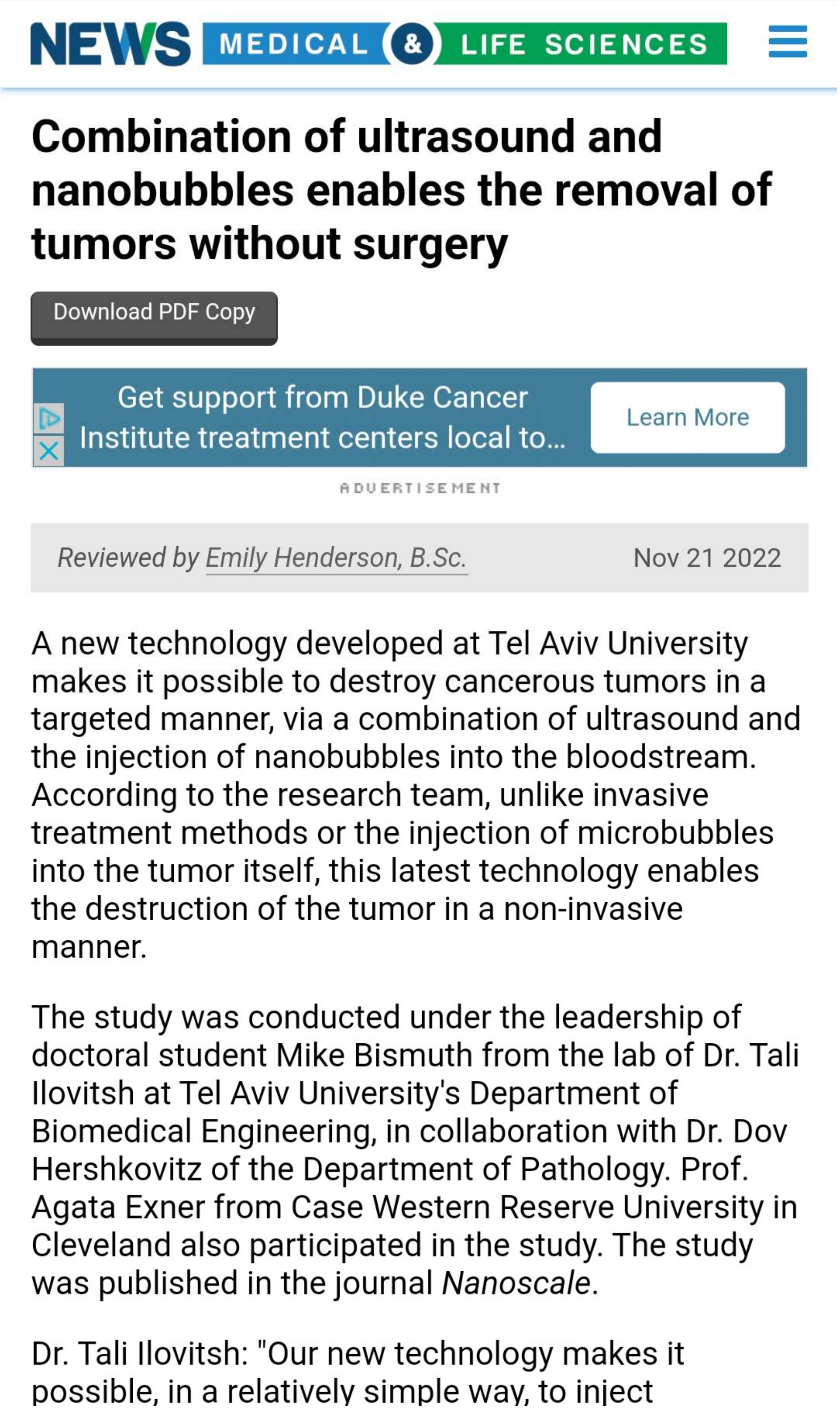
Ultrasound pulses have been used to modulate a liver–brain autonomic nerve pathway to prevent or reverse the onset of hyperglycaemia in models of diabetes in several species. The ion channel TRPA1 was shown to be essential in transducing the ultrasound stimuli within the metabolic control circuit.



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Combination of ultrasound and nanobubbles enables the removal of tumors without surgery

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A new technology developed at Tel Aviv University makes it possible to destroy cancerous tumors in a targeted manner, via a combination of ultrasound and the injection of nanobubbles into the bloodstream. According to the research team, unlike invasive treatment methods or the injection of microbubbles into the tumor itself, this latest technology enables the destruction of the tumor in a non-invasive manner.

The study was conducted under the leadership of doctoral student Mike Bismuth from the lab of Dr. Tali Ilovitsh at Tel Aviv University's Department of Biomedical Engineering, in collaboration with Dr. Dov Hershkovitz of the Department of Pathology. Prof. Agata Exner from Case Western Reserve University in Cleveland also participated in the study. The study was published in the journal *Nanoscale*.

Dr. Tali Ilovitsh: "Our new technology makes it possible, in a relatively simple way, to inject

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Combination of ultrasound and nanobubbles enables the removal of tumors without surgery

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Dr. Tali Ilovitsh: "Our new technology makes it possible, in a relatively simple way, to inject nanobubbles into the bloodstream, which then congregate in the area of the cancerous tumor. After that, using a low-frequency ultrasound, we explode the nanobubbles, and thereby the tumor."

The researchers explain that today, the prevalent method of cancer treatment is surgical removal of the tumor, in combination with complementary treatments such as chemotherapy and immunotherapy. Therapeutic ultrasound to destroy the cancerous tumor is a non-invasive alternative to surgery.

This method has both advantages and disadvantages. On the one hand, it allows for localized and focused treatment; the use of high-intensity ultrasound can produce thermal or mechanical effects by delivering powerful acoustic energy to a focal point with high spatial-temporal precision. This method has been used to effectively treat solid tumors deep within in the body. Moreover, it makes it possible to treat patients who are unfit for tumor resection surgery. The disadvantage, however, is that the heat and high intensity of the ultrasound waves may damage the tissues near the tumor.

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Article | Published: 31 March 2022

Stimulation of the hepatoportal nerve plexus with focused ultrasound restores glucose homoeostasis in diabetic mice, rats and swine

Victoria Cotero, John Graf, Hiromi Miwa, Zall Hirschstein, Khaled Qanud, Tomás S. Huerta, Ningwen Tai, Yuyan Ding, Kevin Jimenez-Cowell, Jacquelyn N. Tomaio, Weiguo Song, Alex Devarajan, Tea Tsaava, Radhika Madhavan, Kirk Wallace, Evelina Loghin, Christine Morton, Ying Fan, Tzu-Jen Kao, Kainat Akhtar, Meghana Damaraju, Linda Barenboim, Teresa Maietta, Jeffrey Ashe, Kevin J. Tracey, Thomas R. Coleman, Dino Di Carlo, Damian Shin, Stavros Zanos, Sangeeta S. Chavan, Raimund I. Herzog & Chris Puleo ✉ — Show fewer authors

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Abstract

Peripheral neurons that sense glucose relay signals of glucose availability to integrative clusters of neurons in the brain. However, the roles of such signalling pathways in the maintenance of glucose homoeostasis and their contribution to disease are unknown. Here we show that the selective activation of the nerve plexus of the hepatic portal system via peripheral focused ultrasound stimulation (pFUS) improves glucose homoeostasis in mice and rats with insulin-resistant diabetes and in swine subject to hyperinsulinemic-euglycaemic clamps. pFUS modulated the activity of sensory projections to the hypothalamus, altered the concentrations of metabolism-regulating neurotransmitters, and enhanced glucose tolerance and utilization in the three species, whereas physical transection or chemical blocking of the liver–brain nerve pathway abolished the effect of pFUS on glucose tolerance. Longitudinal multi-omic profiling of metabolic tissues from the treated animals confirmed pFUS-induced modifications of key metabolic functions in liver, pancreas, muscle, adipose, kidney and intestinal tissues. Non-invasive ultrasound activation of afferent autonomic nerves may represent a non-pharmacologic therapy for the restoration of glucose homoeostasis in type-2 diabetes and other metabolic diseases.

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Doctor using the Electroporation (NanoKnife) passing electric currents directly into the tumour via a needle to kill off cancerous cells. (CREDIT: Creative Commons)

Natalia Norori, the knowledge manager at Prostate Cancer UK, has said the therapy could ‘make a big difference to the quality of life of men diagnosed with localised prostate cancer’.